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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,051	04/13/2004	Kramadhathi V. Ravi	42P8813XD	6109

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT PAPER NUMBER

2815

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/824,051	Applicant(s) RAVI, KRAMADHATI V.	
	Examiner Joseph Nguyen	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation “a plurality of interconnects disposed between the plurality of circuit substrates” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bendik et al. (US 5,591,678) in view of Okojie (US 6,248,646).

Regarding claim 1, Bendik et al. discloses in figure 2 an apparatus comprising a plurality of circuit substrates 58, 72 and the plurality of circuit substrates are in a non-planar orientation relative to one another (substrates 58, 72 are clearly in non-planar orientation) stacked one on the other (elements 44, 46 that make up the circuit substrates, are stacked on each other), each circuit substrate comprising a single crystal semiconductor layer 46 having smallest dimension reduced (col. 4, lines 10-15); circuit devices 50 formed in the single crystal layer of each of the plurality of circuit substrates; and a plurality of interconnects 56 (col. 7, lines 1-2) disposed between the plurality of circuit substrates.

It is noted that the phrase "a single crystal semiconductor layer having a smallest dimension reduced" is a broad limitation and herein interpreted as the single crystal semiconductor layer being thinned to a certain thickness as disclosed in col. 4, lines 10-15 of Bendik et al. Bendik et al. does not a plurality of circuit substrates on a substrate. However, Okojie discloses in figure 2 the plurality of circuit substrates 24 on a substrate 20 (col. 2, lines 63-64). It is further noted that wafers 24 are hereby considered

"substrates" on which semiconductor elements will be formed. In view of such teaching, it would have been obvious at the time of the present invention to modify Bendik et al. by having the plurality of circuit substrates on a substrate in order to enable an array of circuit substrates to be concurrently produced on a larger, industry standard sized wafer (substrate) and consequently increase production rates.

Regarding claim 4, Bendik et al. discloses in figure 3 the circuit devices form integrated circuits 70b, 74 that interact with other electrical devices off the single crystal layer on which the integrated circuits are formed (col. 7, lines 29-31).

Regarding claim 5, Okojie discloses the smallest dimension of each circuit substrate 24 comprises a thickness less than 100 microns (col. 3, lines 33-36).

Regarding claim 6, Bendik et al. discloses a dielectric material 44 (col. 4, line 5). Disposed between the adjacent ones of the plurality of circuit substrates 58, 46.

### ***Response to Arguments***

Applicant's arguments filed on 04/24/2006 have been fully considered but they are not persuasive.

With respect to claim 1, applicant argues the cited references do not disclose a plurality of circuit substrates on a substrate and the plurality of circuit substrates are in non-planar orientation relative to one another and that circuit devices formed in a single crystal layer of each of the plurality of circuit substrates. However, as explained in the rejection of claim 1 above, Bendik et al. discloses in figure 2 an apparatus comprising a plurality of circuit substrates 58, 72 and the plurality of circuit substrates are in a non-

planar orientation relative to one another stacked one on the other, and circuit devices 50 formed in the single crystal layer of each of the plurality of circuit substrates. Further, Okojie discloses in figure 2 the plurality of circuit substrates 24 on a substrate 20 (col. 2, lines 63-64). Therefore, the combination of Bendik et al. and Okojie reads on the claimed invention herein. Since the rejection of claim 1 is proper, the rejection of claims 4-6 still stands.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN  
June 22, 2006.

**EUGENE LEE  
PRIMARY EXAMINER**

A handwritten signature in black ink, appearing to be 'E. Lee', written over the printed name of Eugene Lee.